CLAIMS

What is claimed is:

1.   A method for providing continuous data protection, the method comprising the steps of:

duplicating writes made to a primary volume to a secondary volume;

mapping the writes between the primary volume and secondary volume; and

organizing the mapping of the writes into mapping data structures wherein said structures are structured to enable the primary volume to be rewound to any point in time.

2.   The method of claim 1 wherein writes to the secondary volume are written in sequential order according to the time said writes are written to the primary volume.

3.   The method of claim 1 wherein a mapping data structure is configured to keep track of changes between two points in time.

4.   The method of claim 1 wherein a mapping data structure is used to selectively play back portions of a log of each write made to the secondary volume.

5.   The method of claim 1 further comprising the step of merging mapping data structures together to create a new volume that is identical to the primary volume at a previous point in time.

6.   The method of claim 1 further comprising the step of merging mapping data structures that have the same expiration policy to enhance system performance.

7. The method of claim 1 further comprising the step of fading out data by merging the mapping data structures thereby freeing up blocks that are no longer used.

8. A method for providing continuous data protection, the method comprising the steps of:

tracking writes made to a primary volume;

duplicating the writes in sequential fashion on a secondary volume; and

organizing the mapping of the writes between the primary and secondary volumes into delta maps wherein the delta maps are structured to enable the primary volume to be rewound to any point in time.

9. The method of claim 8 wherein writes to the secondary volume are written in sequential order according to the time said writes are written to the primary volume.

10. The method of claim 8 wherein a delta map is configured to keep track of changes between two points in time.

11. The method of claim 8 wherein a delta map is used to selectively play back portions of a log of each write made to the secondary volume.

12. A system for providing continuous data protection, the system comprising:

a host computer;

a primary volume for storing data written by the host computer;

a secondary volume wherein writes made to the primary volume are sequentially duplicated onto the secondary volume; and

a data protection system configured to manage the duplication of writes to the secondary volume and map data between the primary and secondary volumes using delta maps.

13. The system of claim 12 wherein writes to the secondary volume are written in sequential order according to the time said writes are written to the primary volume.

14. The system of claim 12 further including a volume manager for mirroring writes to the primary and secondary volume.

15. The system of claim 14 wherein the volume manager is a software module running on an intelligent storage switch.

16. The system of claim 14 wherein the volume manager is a software module running on a server.